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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/006,376	12/10/2001	Joe G. Hoffman	016499-957	8409
7590	04/13/2004			
E. Joseph Gess BURNS, DOANE, SWECKER & MATHIS, L.L.P. P.O. Box 1404 Alexandria, VA 22313-1404			EXAMINER KERNS, KEVIN P	
			ART UNIT	PAPER NUMBER
			1725	

DATE MAILED: 04/13/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/006,376	HOFFMAN ET AL.	
	Examiner	Art Unit	
	Kevin P. Kerns	1725	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 December 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 21-32 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 21-32 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 10 December 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>3/22/02</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Drawings

1. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: "320" (disclosed on the last line of page 17, and it is believed that the "318" above "316" should be changed to "320" in the upper left region of Figure 3). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.
2. The drawings are objected to because the term "accoustic" should be spelled as "acoustic" on the right side of Figure 3 (near "328"). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Specification

3. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

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The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

4. The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required: the specification lacks disclosure of the term "ammonium hydroxide", which is present in claims 28 and 30.

5. The disclosure is objected to because of the following informalities: on page 18, 3rd line from the end, reference to the attorney docket number should be deleted, and if the PCT application has become a US Patent, its status should be updated as well. On page 19, last line of the 2nd full paragraph, "324" should be changed to "334".

Appropriate correction is required.

Double Patenting

6. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

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Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

7. Claims 21-30 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-5 of U.S. Patent No. 5,722,442. Although the conflicting claims are not identical, they are not patentably distinct from each other because the claimed system include a source of purified ammonia vapor, a source of ultrapure hydrofluoric acid, a generator that combines the ammonia vapor and ultrapure hydrofluoric acid, piping that connects the generator to a point of use in a semiconductor device fabrication facility, ionic purifier units for each of the sources (flow from reservoirs) of ammonia and hydrogen fluoride vapor, with the source of hydrogen fluoride being anhydrous and essentially ultrapure and arsenic-free, and a recirculating volume of high purity water for each of the sources of ammonia and hydrogen fluoride vapor. One of ordinary skill in the art would have recognized that the structural features of the present application are nearly identical to those set forth in US 5,722,442, and it would have been obvious to remove one or more of the excess structural features set forth in US 5,722,442, as open-ended "comprising" language exists in the present application.

8. Claims 31 and 32 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-5 of U.S. Patent No. 5,722,442 in view of Sarvazyan et al. (US 5,533,402).

Claims 1-5 of US 5,722,442 discloses the elements of claims 21-30 above.

Claims 1-5 of US 5,722,442 does not disclose the means for detecting an endpoint of chemical mixing, in the form of an acoustic velocity measurement sensor.

However, Sarvazyan et al. disclose a method and apparatus for measuring acoustic parameters in liquids using cylindrical ultrasonic standing waves, in which the apparatus includes an acoustic velocity measurement sensor, which is advantageous for determining solute concentrations and for allowing various physical and chemical processes occurring in a fluid to be monitored (abstract; column 1, lines 9-12; column 3, lines 27-42 and 58-67; column 4, lines 1-51; column 5, line 37 through column 12, line 51; and Figures 1-10).

It would have been obvious to one of ordinary skill in the art at the time the applicants' invention was made to modify the claimed system of US 5,722,442 by using the acoustic velocity measurement sensor, as taught by Sarvazyan et al., in order to determine solute concentrations and to allow various physical and chemical processes occurring in a fluid to be monitored (Sarvazyan et al.; column 3, lines 27-42 and 58-64; and column 4, lines 42-51).

Claim Rejections - 35 USC § 102

9. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

10. Claim 21 is rejected under 35 U.S.C. 102(b) as being anticipated by Miki (JP 61-6121).

Miki discloses a system for manufacturing high purity ammonium fluoride, in which the system includes a source of purified ammonia vapor, a source of ultrapure HF, and a mixing means (generator) for reacting the high purity ammonia and high purity HF, such that high purity ammonium fluoride is obtained (abstract).

Claim Rejections - 35 USC § 103

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

12. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

13. Claims 22-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miki (JP 61-6121) in view of Davison et al. (US 4,952,386).

Miki discloses the features of claim 21 above. Miki does not specifically disclose that the system includes connection to a point of use in a semiconductor device fabrication facility, as well as the ultra high purity of the hydrogen fluoride.

However, Davison et al. disclose a method and apparatus for purifying and regenerating hydrogen fluoride to obtain ultrapure HF having impurities in the part-per-billion (ppb) range (including reduction of arsenic), in which the apparatus includes availability for on-site use in semiconductor fabrication facilities, with the apparatus further including several ionic purifier units and conduits for high-purity water recirculation, such that these additional features are advantageous for providing ultrapure HF to semiconductor fabrication facilities, resulting in reduced HF waste from contamination due to impurities (abstract; column 1, lines 7-57; column 2, lines 10-32 and 40-68; column 3, lines 1-68; column 4, lines 1-53; column 5, line 1 through column 12, line 44; and Figure 1).

It would have been obvious to one of ordinary skill in the art at the time the applicants' invention was made to modify the system for manufacturing high purity ammonium fluoride, as disclosed by Miki, by using the apparatus for purifying and regenerating hydrogen fluoride to obtain ultrapure HF, as taught by Davison et al., in order to provide ultrapure HF to semiconductor fabrication facilities, resulting in reduced HF waste from contamination due to impurities (Davison et al.; column 1, lines 7-57; column 2, lines 10-32).

14. Claims 31 and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miki (JP 61-6121) in view of Sarvazyan et al. (US 5,533,402).

Miki discloses the features of claim 21 above. Miki does not disclose the means for detecting an endpoint of chemical mixing, in the form of an acoustic velocity measurement sensor.

However, Sarvazyan et al. disclose a method and apparatus for measuring acoustic parameters in liquids using cylindrical ultrasonic standing waves, in which the apparatus includes an acoustic velocity measurement sensor, which is advantageous for determining solute concentrations and for allowing various physical and chemical processes occurring in a fluid to be monitored (abstract; column 1, lines 9-12; column 3, lines 27-42 and 58-67; column 4, lines 1-51; column 5, line 37 through column 12, line 51; and Figures 1-10).

It would have been obvious to one of ordinary skill in the art at the time the applicants' invention was made to modify the system for manufacturing high purity ammonium fluoride, as disclosed by Miki, by using the acoustic velocity measurement sensor, as taught by Sarvazyan et al., in order to determine solute concentrations and to allow various physical and chemical processes occurring in a fluid to be monitored (Sarvazyan et al.; column 3, lines 27-42 and 58-64; and column 4, lines 42-51).

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Conclusion

15. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. US 6,350,425 (parent divisional application) is also cited.

16. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dr. Kevin P. Kerns whose telephone number is (571) 272-1178. The examiner can normally be reached on Monday-Friday from 8:00am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Dunn can be reached on (571) 272-1171. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Kevin P. Kerns *Kevin Kerns 4/7/04*
Examiner
Art Unit 1725

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April 7, 2004